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1 NAME OR TITLE Col. Campbell	INITIALS		CIRCULATE
ORGANIZATION AND LOCATION AG	DATE		COORDINATION
2			FILE
			INFORMATION
3			NECESSARY ACTION
			NOTE AND RETURN
4			SEE ME
			SIGNATURE

REMARKS Please forward attached
to Mr. Friedman.   J. Parkes.

FROM NAME OR TITLE RID	DATE 26 Jan
ORGANIZATION AND LOCATION 17-131.	TELEPHONE

DD FORM 94
1 FEB 50   REPLACES NME FORM 94, 1 FEB 49, WHICH MAY BE USED.

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GPO 1952—O—213993

NATIONAL SECURITY AGENCY
WASHINGTON 25, D. C.

Serial: EXSAB 20-56
25 January 1956

Mr. William F. Friedman
310 2nd Street, S. E.
Washington, D. C.

Dear Mr. Friedman:

Inclosed is a copy of the agenda for the forthcoming meeting of the Scientific Advisory Board. Also inclosed for your information is a copy of the minutes of the last Board meeting and an announcement of the changes in Board membership.
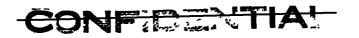
Sincerely,

S. KULLBACK
Executive Secretary
NSA Scientific Advisory Board

3 Incls:
a/s

"Declassify when Inclosures are removed"

NATIONAL SECURITY AGENCY SCIENTIFIC ADVISORY BOARD

AGENDA

15, 16 and 17 FEBRUARY 1956

All meetings will be held in Room 17-131 at the Naval Security Station except as otherwise indicated.

WEDNESDAY, 15 FEBRUARY 1956

0900-1200   Reading of various documents.

1200-1255   Lunch.

1300   Opening remarks by Lieutenant General Ralph J. Canine.

             Review and approval of Minutes of 6-7 April 1955 meetings.

             Report on membership changes.

1315   Report on the Agency Activities - PRODUCTION.

1400   Report on the Agency Activities - COMSEC.

1445-1500   Break.

1500   Report on the Agency Activities - RESEARCH & DEVELOPMENT.

1545   Report on the Agency Activities - STAFF.

1630   Report on NSASAB Panel Activities.

             Proposals for Panel Activities.

NATIONAL SECURITY AGENCY SCIENTIFIC ADVISORY BOARD

AGENDA

15, 16 and 17 FEBRUARY 1956

All meetings will be held in Room 17-131 at the Naval Security Station except as otherwise indicated.

THURSDAY, 16 FEBRUARY 1956

0900	Summary report on PHASE I, II, III Documents on Mechanization. Discussion.
1130-1155	Visit with General Canine in his office.
1200-1255	Lunch.
1300	NSA problems of communication.
1400-1500	Long Range Estimate.
1500-1515	Break.
1515	Discussion of UHF/VHF/SHF plans.

NATIONAL SECURITY AGENCY SCIENTIFIC ADVISORY BOARD

AGENDA

15, 16 and 17 FEBRUARY 1956

All meetings will be held in Room 17-131 at the Naval Security Station except as otherwise indicated.

FRIDAY, 17 FEBRUARY 1956

0900   Report on Recommendations in the Robertson Report.

1200-1255   Lunch.

1300-1530   New Board business:

         Exchange Fellowships.

         Other.

MINUTES OF THE NSA SCIENTIFIC ADVISORY BOARD MEETING

HELD ON 6 APRIL 1955

1. The following were present at the meeting.

    a. <u>Board Members:</u>

        Mr. J. C. McPherson, Chairman
        Mr. H. P. Corwith
        Dr. W. R. G. Baker
        Mr. A. W. Horton
        Dr. H. T. Engstrom (arrived 1400)
        Dr. J. von Neumann (arrived 0935, departed 0955)
        Mr. D. A. Quarles (arrived 1230)

    b. <u>NSA Executive Group for Board Affairs:</u>

        Dr. S. Kullback, Vice Chairman
        Mr. A. B. Clark
        Dr. H. H. Campaigne
        Dr. R. A. Leibler

    c. <u>NSA Observers:</u>

        Lt. General R. J. Canine, USA (departed 1010)
        Brig. General W. M. Burgess, USAF
        Captain D. M. Agnew, USN
        Colonel J. J. Davis, USA
        Colonel D. Sinclair, USA
        Colonel F. E. Herrelko, USAF
        Dr. J. J. Eachus
        Dr. R. H. Shaw
        Dr. H. Nyquist
        Dr. H. J. Stukey
        Mr. M. H. Klein
        Mr. C. J. Schierlmann
        Captain I. T. McDonald, USAF
        Captain R. J. Scott, USAF

    d. <u>Recorder:</u>

        Miss C. Johnson

2. The meeting was opened by the Chairman, Mr. McPherson. The tentative minutes of the previous Board meeting on 20-21 April 1954, were reviewed and approved as written.

3. General Canine told of results of the college recruitment program of last year. NSA hired 500 college graduates, mostly from the upper half of the graduating class. The psychometric consulting service has materially improved the personnel situation. NSA had 14% turnover last year. Of the 1200 people moved to Fort Meade only 41 quit.

4. General Canine requested the Board's consideration of the desirability of setting up a separate, or captive organization, as an adjunct to the Agency. A discussion followed in which the following points were mentioned:

    a. The Board might organize an Ad Hoc Committee to consider the question.

    b. Perhaps an organization such as RAND, or even a portion of RAND itself, might be used in such an endeavor.

    c. Dr. von Neumann believed there were enough people in the Washington area to provide a nucleus for the project.

    d. General Canine thought sufficient funds would be made available for such an endeavor.

    e. Mr. Horton and Mr. Corwith both favored further investigation of establishing a captive organization and that some members of NSA be included in the committee if one is appointed.

    f. Dr. Baker suggested that RAND evaluate the idea.

    g. General Canine and Mr. McPherson agreed to discuss the subject informally at a later date.

5. Dr. Baker reported on the progress of the R/D Advisory Council of the Signal Corps. This Council has 14 members with Dr. Hull as Chairman. They have several "task forces", who come up with special reports, such as the BEACOM report with its 32 recommendations.

6. Colonel Sinclair, NSA, briefed the Board on college graduate recruitment. In the spring 91 colleges were visited in which 1039 acceptable people were located. Of these 215 were offered jobs and 191 bachelors have accepted. In the coming year it is planned to visit 111 colleges, aiming for 350 recruits.

7. Major Grottle described the NSA Building at Fort Meade and the layout of the site. The building will have 1,100,000 square feet of usable space and will accomodate 10,000 people.

8. Mr. Clark reported on the present status of R/D activities and plans for the future. The budget for R/D is $14.4 million, which with overhead and other realistic charges is in fact equivalent to $19.3 million. Of this about 12% is true research. It is planned to put most of this research in an unclassified outside site.

9. Mr. Mathews presented a talk on his Division, the Communications Security Equipment Division.

10. Dr. Eachus introduced those who were to speak on COMINT.

    a. Mr. Kirby discussed the problems involved in the intercept of traffic.

    b. Mr. Hausman gave the R/D approach to the problems and the program which they have in the intercept group in R/D to support PROD.

11. The meeting was adjourned at 1630 until 0900 7 April 1955.

S. KULLBACK
Executive Secretary
NSASAB

(Note: A verbatim record of the Board proceedings and individual reports will be on file in the Office of Research & Development for individual study.)

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MINUTES OF THE NSA SCIENTIFIC ADVISORY BOARD MEETING

HELD ON 7 APRIL 1955

1. The following were present at the meeting.

    a. <u>Board Members:</u>

    Mr. J. C. McPherson, Chairman
    Mr. H. P. Corwith
    Mr. A. W. Horton
    Dr. H. T. Engstrom (arrived 0930)
    Dr. J. von Neumann (arrived 1425)

    b. <u>NSA Executive Group for Board Affairs:</u>

    Dr. S. Kullback, Vice Chairman
    Mr. A. B. Clark
    Dr. H. H. Campaigne
    Dr. R. A. Leibler

    c. <u>NSA Observers:</u>

    Major General J. B. Ackerman, USAF
    Brig. General W. M. Burgess, USAF
    Dr. J. J. Eachus
    Dr. H. Nyquist
    Mr. M. M. Mathews
    Mr. C. J. Schierlmann
    Mr. J. J. Connelly
    Mr. H. L. Conley
    Mr. H. DeFrancesco
    Mr. D. R. Hogan
    Dr. A. W. Hesse
    Dr. R. H. Shaw
    Captain I. T. McDonald, USAF
    Captain R. J. Scott, USAF

    d. <u>Recorder:</u>

    Miss C. Johnson

2.   Mr. Clark opened the meeting by introducing Mr. Conley from PROD.

    a.   Mr. Conley's talk concerned traffic analysis. There followed a brief discussion of the problem of intercepting hand-sent Morse traffic and the difficulties involved in developing a translator to do the job automatically.

    b.   Mr. DeFrancesco of R/D briefed the Board on the intercept of weather information and its strategic value.

3.   Mr. Hogan presented a talk on the general features of Analytic machines, with some specific illustrations of their applications.

4.   Dr. Hesse gave a presentation on Special Machine Systems.

5.   Dr. Leibler described various hand systems of encipherment used and some of the techniques of cryptanalysis.

6.   Mr. Hogan gave a survey of analytic machines explaining their various functions. A complete written version of these expositions is available to Board members on request.

7.   A discussion followed concerning evaluating computer ability and certain possibilities for improving analytic machines.

8.   Dr. Engstrom reported for his Sub-Panel on analytical machines. The report emphasized the necessity of additional research effort to determine the physical limits of the components necessary to realize ultra high speed operation. It accepted the general concept of a programmed sequence control machine communicating with ancillary units to accomplish particular cryptologic processes. Provision for microprogramming, functional parallelism, and simplicity of programming were urged. The report commended the work to date on FARMER and recommended additional engineering and design effort to define the functional elements of the system and to accomplish initial design work. In the discussion which followed, considerable attention was given to the value of general purpose machines versus special purpose equipment. There was general agreement that target speeds for a general system should be of the order of 50,000 characters per second for input-output, 250,000 characters per second drum reading and 1,000,000 characters per second logical manipulation. A copy of the full report is attached.

9.   The possible use of machines for automatic programming was discussed.

10.   The meeting adjourned at 1630.

S. KULLBACK
Executive Secretary
NSASAB

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(Notes: Friday, 8 April, was left as an open date, during which time
Board members might study particular subjects of interest. A
verbatim record of the Board proceedings and individual reports
will be on file in the Office of Research & Development, Room 17-131,
NSS, for individual study.)